

be almost as unintelligible to him as an Australian jargon, in spite of the fact that our vocabulary and grammar differ but slightly from his. But a familiar word sounds strangely when its pronunciation is altered ever so little, and when the outward form of a whole group of words is thus changed, the most skilled philologist would find himself at fault.

Can anything, therefore, be more absurd than an endeavour to mummify an extinct phase of pronunciation, especially when the mummy-shroud was at its best but a rude and inadequate covering which pourtrayed but faintly and distantly the features of the corpse beneath? English spelling has become a mere series of arbitrary enigmas, an enshrinement of the wild guesses and etymologies of a pre-scientific age and the hap-hazard caprice of ignorant printers. It is good for little else but to disguise our language, to hinder education, and to suggest false etymologies. We spell, we know not why, except that it is so ordained in dictionaries. When Voltaire was told that *a-g-u-e* was pronounced *ague*, and *p-l-a-g-u-e* *plague*, he said he wished the *ague* would take one-half the English language and the *plague* the other half; but the fault lay not with the English language, but with English spelling.

Ignorance is the cause of our bad spelling as it is the cause of most of the mischiefs which afflict the world. The brief sketch of the history of writing we have been studying to-night has shown us the goal at which writing should aim, the end in which the labours of previous generations should find their fulfilment. Writing should represent clearly, tersely, and as nearly as possible the individual sounds of words, and unless it does this it has not advanced much beyond those infantile stages of growth through which we have watched it struggling to pass. The principal sounds of a language should each have a special symbol set apart to denote them, and each symbol should denote one sound, and one sound only. We ought never to hesitate for a moment over the pronunciation of a proper name or a word we have never heard pronounced. Until we have an alphabet which fulfils these conditions, our system of writing is still imperfect and misleading, and our civilisation on this side is less advanced than that of the ancient Hindus. We may well envy the rude races of the Pacific or Southern America, for whom the missionaries have provided adequate and rational alphabets in which to write their first essays in literature. An alphabet which allows us to express the sound of *e* in thirteen different ways, which has no special symbols for such common sounds as *th* in *then* or *a* in *man*, and yet possesses otiose and needless letters like *c* and *x* is unworthy of its name, and still more of being the final result of all that toil and thought which first worked out the Phœnician alphabet and then fitted it to express the idioms of Athens and Rome. We are sometimes told that to reform our alphabet would destroy the etymologies of our words. Ignorance, again, is the cause of so rash a statement. The science of etymology deals with sounds, not with letters, and no true etymology is possible where we do not know the exact way in which words are pronounced. The whole science of comparative philology is based on the assumption that the ancient Hindus and Greeks and Romans and Goths spelt pretty nearly as they pronounced, in other words were the happy possessors of real alphabets. It lies with ourselves to determine whether we, too, shall be equally happy. The spread of education which we are witnessing, and the general interest taken in it, afford an exceptionally favourable opportunity for breaking the yoke of bondage in which the printers have kept us. If our board-schools are to be tied down to the particular mode of spelling advocated by Walker or some other maker of unscientific dictionaries, the opportunity will have been lost, and the yoke of bondage will be bound more tightly round the

necks of our children than it is even round our own. I know the practical difficulties that lie in the way of reform, but I know also that they are not insurmountable. Too often the difficulty is but an excuse for our own lazy disinclination to go to school again and learn to read English in a new way. But it is not by laziness, by shrinking from trouble and exertion, that England has gained the place it now holds among the nations of the world, and the value of a thing is measured by the labour it demands to achieve it. After all, the introduction of a new alphabet is not much to ask for. It is no more than was asked for and obtained by the old Phœnicians of the Delta, by the Greeks, by the Romans, nay, by our own ancestors also. And many of them, too, had to give up their cherished idols before they could accept it; I fancy it must have cost the Anglo-Saxon cutter of runes as hard a struggle to adopt the new-fangled alphabet of the Roman missionaries as it may cost some of us to give up the alphabet of the printers for one which would fitly express our own splendid inheritance of speech. But let there be no mistake upon the matter; it is not a reformed spelling, as is often erroneously and injudiciously said, but a reformed alphabet that is required. We can not work to good purpose with imperfect and worn-out instruments. High farming needs steam-ploughs, and not the primitive instrument of the Egyptian peasant. If the history of writing has taught us anything, it is that writing is perfectible, and that what was done in old days by those whose civilisation we are apt to consider inferior to our own can be done also by ourselves.

#### NOTES

AT the anniversary meeting of the Geological Society on Friday the Wollaston medal was assigned to M. A. Daubrée, of Paris, and the Wollaston fund to Mr. Thomas Davis, of the British Museum. The Murchison medal and fund were presented to Mr. R. Etheridge, F.R.S., Palæontologist to Her Majesty's Geological Survey and the School of Mines; the Lyell medal to Mr. J. Evans, LL.D., F.R.S.; and the Lyell fund to Prof. Quenstedt, of Tübingen, on whose behalf it was acknowledged by Prof. H. G. Seeley, F.R.S.

M. HERVÉ-MANGON has been appointed director of the Paris Conservatoire des Arts et Métiers, in succession to General Morin.

MM. ANTOINE BREGUET, son of the celebrated member of the Institute, and Richet have taken the joint direction of the *Revue Scientifique*, the largest and most influential French scientific periodical. M. Antoine Breguet will write more specially on physics, and M. Richet on chemistry. It is understood that M. Alglave, the former editor, has resigned in order to devote himself more entirely to the propagation of Spencerism and Monism.

M. LŒWY, sub-director of the Observatory of Paris, is conducting very delicate researches for determining the different flexions arising from the weight of meridian instruments when they are pointed in any other position than the zenith. The study of these small differences is conducted on a new principle invented by M. Lœwy. A biconcave lens has been placed in the central part of the instrument, and arranged so that an image of the spider-thread can be placed in coincidence with the threads in a certain position. In moving the instrument the coincidence is destroyed, and can be re-established by the micrometer. The image of the threads can be seen (1) with the eyepiece reflected on the edges of the lens illuminated through the axis by a lamp placed as usual, (2) by the anterior part of the lens illuminated by a lamp placed in front of the eyepiece, (3) by a reflection on the object-glass. The sensibility of the process is so extraordinary that a difference was found when a weight of ten kilogs. was suspended at each end of the instru-

ment, whose total weight exceeds a ton. These experiments are conducted by M. Lewy at the meridian telescope which is used for small planet observations from full moon to new moon. During that time the instrument is not employed, observations being made at Greenwich according to the co-operation established by Leverrier and Sir George Airy twenty years ago.

IT has been remarked by Admiral Mouchez that the number of small planets observed at Greenwich last year did not reach the twentieth part of that observed at Paris. A member of the Institute has derived from this fact the inference that, irrespective of the differences of weather produced by the difference of situation, the view must have been clearer as a whole during the waning moon than during the other part of its revolution. The suggestion is worth being tested by direct observation, and is one of the most obvious instances where the advantages of connecting astronomical observations with meteorology, so much advocated by Leverrier, may be illustrated.

THE building of the Nice Observatory established by M. Bischofsheim, is progressing favourably. M. Perrotin, one of the astronomers of the Paris Observatory, has been appointed director, and will leave for Nice as soon as the state of the works may require his presence in this magnificent establishment.

IT is proposed to establish a meteorological and magnetical observatory on the Island of Réunion.

THE wide-spread and daily-increasing applications of electricity have caused the formation in Berlin of an "Electrotechnischer Verein." Its establishment is in a great measure due to the energetic German Postmaster-General Stephan, whose lively interest in the latest advances of science we have already had occasion to notice. The officers include, besides Herr Stephan, such well known names as Prof. Kirchhoff and Dr. Werner Siemens. The membership already numbers over 700, and embraces prominent representatives from all departments of science and art.

IT being now twenty-one years since the Geologists' Association was established, the event is to be marked by a social meeting of the members at St. James's Restaurant on Thursday, March 4, at 6.30 P.M.

THE already large number of periodicals devoted to chemistry in the German language is increased by the appearance in Vienna of the *Monatshefte für Chemie und verwandte Theile anderer Wissenschaften*. This new journal will contain all the chemical memoirs presented to the Imperial Academy of Sciences, whither with but rare exceptions, the results of chemical research in Austria are forwarded for publication. By its rapid publication it is intended to meet a want felt by Austrian chemists, whose patience is tested by the slow appearance of their investigations in the *Sitzungsberichte* of the Academy, a lapse of four or five months often intervening between presentation and publication. There is perhaps also a tribute to the national pride in possessing finally, like their *confrères* in Russia and Italy, their own chemical journal, and ceasing to be dependent on French and German periodicals for bringing the results of their work before the great mass of chemists. The *Monatshefte* will appear ten times during the year, and form a volume of about 800 pages. In the first number, which was issued in January, there are articles by Weidel and Herzig, on Derivatives from Bone Tar; by Höning, on a New Isomeride of Gluconic Acid; by Exner, on the Theory of Inconstant Galvanic Batteries; by Herth, on the Synthesis of Diguanide, &c.

AT the annual public *réunion* of the Belgian Academy on December 16, 1879, interesting discourses were delivered by Baron de Selys Longchamps, on the classification of birds since Linnaeus, and by M. Gilkinet on the development of the vegetable kingdom in geological times (see *Bulletin*, No. 12). A report

was presented on the work of the Academy in the mathematical and physical sciences during the last five years, the jury awarding the quinquennial prize to M. Houzeau, for his "Uranometrie générale." The Academy having several years offered a prize for researches on torsion, has, last year for the first time, received a memoir on the subject, which receives honourable mention, but is not thought worthy of the prize. The deaths recorded during the year have been those of one member, Chappuis, and three associates, Dove, von Lamont, and Gervais.

HAVING made numerous observations of the enigmatical red spot of Jupiter, M. Niesten finds (*Belg. Acad. Bulletin*, No. 12, 1879) the duration of rotation a period of 9 hours 55½ minutes. Comparing past observations of the reappearance of this spot since Cassini's time, he observes that the time elapsing between two successive returns of the spot, seems to be comprised between five and six years, that is to say, that in one revolution of Jupiter, which is 11°86 years, the spot appears to attain twice its maximum intensity, the one when the planet reaches the heliocentric longitude 324°, *i.e.*, when it is about 50° distant from its perihelion (as Maroldi indicates); the other when it reaches the longitude 157°, *i.e.*, when it is near its aphelion. In the return of this "tache fixe et passagère en même temps," as Cassini designates it, may we not (the author asks) find the indication of a permanent spot on Jupiter, a spot which reveals itself to the investigations of astronomers, though concealed at certain epochs by an atmosphere more or less thick?

THE philosophical Faculty of Göttingen University have just had occasion to cancel a doctor's diploma granted *in absentia* to a Greek, Demetrius Menagius, who had presented a paper in 1871 on Xenophon's Hellenica, professedly his own, while it was really a copy of one published in Athens in 1858 by A. Kyprianos, the title-page being falsified, and Menagius's name given as the author's.

FROM Prof. Piazzi Smyth's Meteorological Report appended to the last Quarterly Return of the Births, Deaths, and Marriages for Scotland, we take the following interesting remarks:—"Like its two preceding months of this last quarter of 1879, December had an unprecedently high barometric pressure. But, unlike them, it began with a furious blast of low temperature, chiefly in the south of Scotland, so that there no less than five stations chronicled special temperatures actually below zero of Fahrenheit. And when the Botanical Society met in Edinburgh during the beginning of the month, there was rather a fearful account of the much greater degree of cold that the members had been thus far chronicling this December to what they had registered during the terrible December of 1878. But their fears for the future were needless; the solar phenomenon of sun-spot activity had already passed its lowest point; the low temperatures measured were chiefly confined to the south-eastern divisions; and a warm period set in so decidedly, and generally, over the whole country towards the end of the month, that the mean temperature of the whole of December, 1879, though lower than the mean of all former years, yet has proved 4° higher than that of December, 1878; and together with this so-far improved feature of temperature, the month shows less humidity, less number of rainy days, less rainfall, less cloud, a little more sunshine, but stronger wind, and now chiefly from the west. Territorially, the lowest mean temperatures were not on the hill-tops, but at moderate elevations and in the south, so that there Thirlstane Castle recorded 29°2, and Stobo Castle 30°2; while in the extreme north Scourie recorded so much as 42°8, and Sandwich 40°2—a memorable inversion of ordinary latitude effect. Rain was most abundant in the north-west and north, so that there Dunvegan measured 6.71 inches, Stornoway 5.72 inches, and Scourie 5.30 inches; while in the south-eastern, East Linton measured only 0.50 inch, and Smeaton 0.52 inch. A few lightnings and rather more auroras were seen, chiefly in the north."

FROM an interesting paper in a recent number of the *Revue Scientifique*, on "Fire and Water in Paris," we learn that fire claims a larger number of victims in London than in any other large city in Europe. The lowest percentage of those who meet their death by fire is in Munich, where the percentage is 4 per 100,000 inhabitants; in Glasgow it is 17, in Berlin 2, in Paris 24, Naples 41, Hanover 57, Cologne 71, and London 83.

IT is stated that Prince Ouroussoff, Russian Secretary of State, is engaged on a scheme for introducing the Gregorian Calendar into Russia.

SIGNOR DENZA, of the Moncalieri Observatory, points out the coincidence of a shock of earthquake in Lombardy and Piedmont on the 9th inst. with the great activity of Etna the same day, and an eruption of a volcano in St. Domingo.

DETAILS are now to hand regarding the earthquake at Carlsruhe on January 24 last. The phenomenon consisted of a very slight shock followed immediately by a more intense one. It occurred at 7.47 p.m. The direction was from west to east. In many parts of the Palatinate an earthquake was observed on the same date about 6.45 p.m. It lasted for seven or eight seconds and was accompanied by loud subterranean noise, ending with a dull explosion. Its direction was from south-west to north-east. Another shock occurred on January 25 at 3.35 a.m. Further earthquakes are reported from Nevesinje (Bosnia), where a violent shock occurred on January 27 at 4.30 p.m., and from San Salvador, where an earthquake did serious damage in the capital on January 10.

A FEW years ago Dr. Legoff subjected himself to an operation of transfusion of blood, in order to save the life of a wounded soldier lying in Val de Grace Hospital in Paris. The operation was successful, inasmuch as the patient escaped, but the health of the doctor declined. He went to Algiers to recover, but with no avail. We learn from an address by M. Wohl, a Professor to the Lycée, on the occasion of his funeral that he died in the beginning of February.

THE "Ornis" (Society for Ornithology and Bird-culture) of Berlin will hold its biennial exhibition from February 27 to March 2 next. The last exhibition, in the spring of 1878, was a great success. The Society will now give gold, silver, and bronze metals to the most deserving exhibitors. Dr. Karl Russ, of Steglitz, near Berlin, is the president, and requests all breeders of birds and possessors of rare and costly specimens who would like to participate in the exhibition to communicate with him.

M. DREYFUS, of Paris, has just published a second edition of M. W. de Fonvielle's recent work, "Comment le font les Miracles en dehors de l'Église," with a new preface and a number of additions relating to recent events.

A CRAYFISH epidemic has broken out from some unexplained cause in almost all the waters of Alsace-Lorraine. Possibly like most epidemics it may be due to some fungus. The German Government has applied to several eminent zoologists for their opinion, and resolved to prohibit the capture of crayfish in this province for the next three years. A number of female crayfish from the piscicultural establishment at Hüningen are to be imported into the Alsatian waters.

AT a recent meeting of the Berlin Academy of Sciences Prof. Conze spoke on the archaeological investigations which are being made at Pergamon, and in which besides himself Engineer Humann and Herren Bohn, Stiller, Raschdorff, Jun., and Lolling took part. The principal interest centred round a magnificent altar which was found close below the highest point

of the Pergamon Acropolis. We must refer our readers for details to the *Transactions of the Academy*.

THE Low-Rhenish Antiquarian Society at Xanten are having extensive excavations made outside the Cleve gate of that town, where very large Roman foundations have been discovered, dating from the Colonia Trajana.

THE Sixth Annual Report of the Postal Microscopical Society, for the distribution of microscopical slides by post, gives a favourable impression of the work carried on by the Society, which has now 138 members, distributed over the country. Mr. Alfred Allen, 1, Cambridge Place, Bath, is the secretary.

NATIVE Japanese papers state that arrangements for constructing a railway between the Urouchi coal mines and the Ishigari river in the island of Yezo are progressing, and that an agent of the Colonisation Department will shortly proceed to America to purchase necessary material.

HERR ALBIN KOHN has examined various tumuli near Czakanow, in Poland, in which well-preserved skeletons have been found, exhibiting in point of greater height, convexity of the frontal and the occipital, straightness of the facial line, and other cranial characteristics, a Caucasian rather than a Slave-type. Near the Cetynia, an affluent of the Bug, prehistoric graves of similar form to those of Czakanow have been opened, but owing to the want of care of the workmen it was impossible to determine whether, as in the latter, the bodies were ranged on the back, side by side. The Polish chroniclers speak of a nomadic race called Jadvinges, whose origin was unknown, and who, after ages of aggressive warfare, were only wholly subdued in the thirteenth century; and it is not improbable that in the tumuli of the Cetynia Herr Kohn and his coadjutor, Herr Eichler, may have come upon the representatives of this people.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus*) from India, presented by Mrs. Macauley; a Water Rail (*Rallus aquaticus*), European, presented by Mr. T. J. Mann; three Black Leopards (*Felis pardus*, var.) from India, three Burrhel Wild Sheep (*Ovis burrhel*) from the Himalayas, a Pig-tailed Monkey (*Macacus nemestrinus*) from Java, deposited; four Common Blue-birds (*Sialia wilsoni*) from North America, a Grey Plover (*Squatarola helvetica*), a Bar-tailed Godwit (*Limosa lapponica*), European, an Ocellated Monitor (*Monitor ocellatus*) from East Africa, purchased.

#### PHYSICAL NOTES

TWO independent sets of observations of the electro-magnetic rotation of the plane of polarisation in gases have recently been made—one by MM. Kundt and Röntgen in Strassburg, the other by M. Henri Becquerel, of Paris. The details of the systematic and elaborate research of the former are given in *Wiedemann's Annalen*. The general result was arrived at, though without sufficient precision to formulate the mathematical law of dependence, that those gases which have the highest indices of refraction possess the greatest rotatory power under magnetic strain. The gases examined—air, oxygen, nitrogen, carbonic oxide, carbonic dioxide, coal-gas, ethylene, and marsh-gas, gave a rotation agreeing in sense with that of the magnetising current. The authors also speculate upon the probability that the plane of polarisation of the atmosphere would be found to be rotated under the influence of terrestrial magnetism, and calculate from their results that a thickness of no less than 253 kilometres of air would be necessary to produce a rotation of 1° in a north-easterly azimuth. M. Becquerel approached the subject from a completely different point of view. Some months ago, when examining the vapour of carbon disulphide, he had found an abnormal apparent difference in its optic rotatory power according to the position of the tube in which it was examined. While studying another matter, however, a flood of light was thrown on this observation. In the endeavour to determine as exactly